VERIFICATION OF TRANSLATION

I, Joe Crabbs, a translator with Chillson Translating Service, 3530 Chas Drive, Hampstead, Maryland, 21074, hereby declare as follows:

That I am familiar with the German and English languages;

That I am capable of translating from German to English;

That the translation attached hereto is a true and accurate translation of German language International Application No. PCT/AT003/000314 titled, "BUILDING WITH HEATED HOLLOW WALL COMPONENTS;"

That all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true;

And further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any registration resulting therefrom.

By Joseph Crabbs

Executed this 25 day of July 2005.

Witness Anne Chillson

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BUILDING WITH HEATED HOLLOW WALL COMPONENTS

The invention relates to a building composed of outside wall components, roof components, and optionally ceiling components, at least the outside wall components being made double-walled, and having panels which are connected to one another with the formation of at least one cavity in the outside wall component via spacers with a distance from one another, in the cavity between the panels of the outside wall component there being a means for supplying heat to the cavity of the outside wall components.

WO 02/22975 A1 for a generic building also mentions the idea of using the intermediate space between the panels of the wall components which are made in at least two layers to heat or cool the building by connecting the cavities to the corresponding heating and cooling means.

DE 198 01 165 C proposes providing a heating means in the hollow wall. The heating means should have a plate which adjoins the wall to be heated over a large area.

CH 687 884 A discloses providing installation channels within a hollow wall.

The object of the invention is to develop the building known from WO 02/22975 A1 such that the passage of heat through the panels forming the outside walls is at least reduced.

This object is achieved as claimed in the invention in a building of the initially mentioned type in that the means for supplying heat is located exclusively in the lower area of the outside wall components.

Other preferred and advantageous embodiments of the building as claimed in the invention are the subject matter of the dependent claims.

Since in the building as claimed in the invention the wall components which form the

outside walls and/or the inside walls are equipped with a heating means, it is possible to route so much heat to the cavity in the wall components that heat losses are reduced or compensated. It is not primarily intended here that the heat supply by the heating means located in the cavity of the wall components be chosen to be so large that the building is also heated.

In the invention the heating components of the heating means are located in the lower area of the cavity of the outside wall components, its being preferred if the heating components are located in the area of the "sills" on which the outside wall components stand vertically.

Other details, features and advantages of the invention follow from the description below of preferred embodiments of the invention with reference to the drawings.

Figure 1 shows partially in a section a wall component of a building as claimed in the invention consisting of two wall components which are to be placed on top of one another,

Figure 2 shows a detail of a wall component on an enlarged scale,

Figure 2a shows a detail of a wall component of one modified embodiment on an enlarged scale,

Figure 2b shows another embodiment of a wall component and

Figure 2c shows a third embodiment in the area of the sill of the wall component,

Figure 3 shows a wall component in an oblique view (partially cutaway),

Figure 4 shows the connection of a ceiling component to a wall component in an oblique view (partially cutaway),

Figure 5 shows a vertical section to Figure 4,

Figure 6 shows a connection of a roof component to a wall component in an oblique view (partially cutaway),

Figure 7 shows a vertical section to Figure 6,

Figure 8 shows two roof components bordering one another in the ridge area in an oblique view (partially cutaway),

Figure 9 shows a vertical section to Figure 8,

Figure 10 shows in an oblique view two wall components bordering one another in a corner joint with a ceiling component and a roof component,

Figure 11 shows the corner from Figure 10 in an exploded view,

Figure 12 shows the corner from Figure 10 viewed from obliquely underneath,

Figure 13 shows the corner in a view from Figure 12 in an exploded view,

Figure 14 shows another embodiment in the lower area of a wall component,

Figure 15 shows an installation example for the embodiment as shown in Figure 14,

Figure 16 shows another installation example for the embodiment from Figure 14 and

Figure 17 shows a third installation example for the embodiment as shown in Figure 14.

A building as claimed in the invention in the embodiment shown in the figures consists of outside wall components, inside wall components, ceiling components and/or roof components, the components being made at least twin-walled. Each of the components of the building as claimed in the invention accordingly consists of at least one outer panel, at least one inner panel and spacers such as spacer blocks or spacer strips which connect the panels of the components with a distance from one another.

The panels comprising the outside wall components, inside wall components, ceiling components, and/or roof components of a building as claimed in the invention consist of wood material, particle board being emphasized. Within the framework of the invention, particle board,

in the form of OSB board (multilayer board) which is produced from long, slender, oriented wood chips with a predetermined shape and thickness and a binder (OSB board), is preferred.

The wood chips in the outside layers can be oriented parallel to the panel length or width. The wood chips in the middle layer can be arranged randomly, or are oriented generally at a right angle to the wood chips of the outside layer.

For the invention, the particle board can also consist of long, slender, oriented wood chips with a predetermined shape and thickness which are connected with a binder into USB board (single layer board) in which the orientation of the wood chips over the entire thickness of the panel is essentially uniform. A transversely placed middle layer, as in the above described OSB board, is not provided in this particle board.

The spacers such as strips or blocks can consist of wood material, and for example can be particle board which has been cut accordingly. The spacers (strips or blocks) can also be solid wood parts.

It is preferred if the inner and outer panels of the components as claimed in the invention are connected to the spacers by glues. Screws, nails and the like can also be provided which are however used mainly to hold the components as claimed in the invention together until the glue layer has set.

The ceilings and roof need not necessarily be cooled or heated in the invention.

It is advantageous if a wall component is made in two parts, one part being a sill component which is located on the lower end of a wall component. The sill component and wall component become a unit after installation, and the heating for the house can be integrated in the sill component.

In the case of heating components in the area of the sill components heat conduction takes place in the intermediate spaces of the wall components by rising and falling air columns.

The flow temperature of the heating component (water-filled pipe of metal or plastic or composites) can be for example 40° to 75°C. The choice of the flow temperature also determines the height of the air column, i.e. the wall can be heated to the desired height, for example a height of 1 m, 1.5 m, or 2 m.

A building which is provided with the features as claimed in the invention can be heated via the outer and/or inner walls.

It is advantageous in the invention that it is gravity heating without additional means for circulating the air (for example, fans). The pipe which is provided in the building as claimed in the invention as a heat-releasing component can be made with additional heat conduction sheets or rods in order to enlarge the heat-releasing surface.

As Figure 1 shows, the outside walls of a building as claimed in the invention can be formed from outside wall components 10. Each outside wall component 10 consists of two panels 11 which are kept apart from one another by spacer strips 12 and are connected to one another via spacer strips 12.

The lower of the two outside wall components 10 which are placed on top of one another in Figure 1 stands on a sill 20 which can consist of any material and can be produced for example from wood, plastic, metal or a mineral material, such as concrete or the like.

The sill 20 has an essentially U-shaped cross sectional shape with a lower, horizontally aligned crosspiece 21 and two legs 22 which project to the top. The panels 11 of the lower outside wall component 10 rest vertically on the ends of the legs 22 of the sill 20, which ends point up.

In the area of the cavity which is open to the top in the sill 20 there is a heating means 30 (Figure 2). It consists of a heat-releasing rod 31 which in the embodiment shown is a pipe 32 through which a heating medium flows. The rod 31 rests on supports 33 which for their part stand vertically via an insulating layer on the surface of the crosspiece 21 of the sill 20 which points up. Preferably a heating rod 31 is held simply in the recesses 36 which are open to the top in the supports 33, for example inserted.

The surfaces 35 of the supports 33 which point up can be bevelled, as shown in Figures 1 and 2 to 2c, so that the supports 33 are also used as centering aids when the wall components 10 are placed on the sills 20.

Figure 2 shows the lower part of the arrangement as shown in Figure 1 on an enlarged scale.

In the embodiment as shown in Figure 2a, the two legs 22 of the sill 20 and accordingly the supports 33 are made higher than in the embodiment as shown in Figure 2.

Figure 2b shows an embodiment in which one leg 22' of the sill 20 can be removed so that the pipe 32 of the heating means 31 can be inserted from the side into the recesses 36' which are open to the side in the supports 33 even when a wall component 10 has already been erected on the sill 20. This allows for example pipes 32 to be installed or replaced not only subsequently, but also allows repairs to be made.

Figure 2c shows one modification of the embodiment from Figure 2b, in which the supports 33 have recesses 36 which are open to the top for insertion of the pipes 32 in the embodiment as shown in Figures 1 and 2, even if here the legs 22' of the sill 20 are made to be removable.

The pipes 32 of the heating means 31 can be ribbed pipes and/or pipes with external attachments in the form of rods, disks or plates in order to enlarge the heat-releasing area of the

pipes 32. If the supports 33 are metal, they also act as enlargements of the heat-releasing surface of the pipes 32 of the heating means 31.

Figure 3 shows the arrangement of two wall components 10 which are located on top of one another and the sill 20 in an oblique view, its also be shown that the supports 33 are arranged distributed over the length of the sill 20 and for example are combined into groups of several (two) supports 33.

Heat is released through the heating rod 31 into the cavity 13 between the panels 11 of the wall components 10. In doing so the amount of released heat is preferably chosen such that the heat losses which would occur when heat emerges to the outside from the interior of a building composed of wall components 10 are compensated. Therefore the K value of a wall formed from the wall components 10 is so to speak reduced to 0.

What is analogous can also be applied to cases in which the outside temperature is higher than the temperature within a building which is composed of wall components 10, in which case there is a cooling means. Such a cooling means is preferably located in the area of the top end of a wall of a building composed of wall components 10.

The supports 33 can consist of any material, it is preferable if the supports 33 are formed from plastic or the like or from wood material.

Instead of a pipe 32 through which a heating medium flows, the heating rod 31 can also be an electrical resistance heating rod or wire.

In order to not to hinder the flow of heated air indicated by the arrow 2 in Figure 2 through the cavity of the wall components 10 up in the area of the intermediate ceilings formed by ceiling components 40, as shown in Figures 4 and 5, in the connection area of the ceiling components 40 to

the outside wall components 10 there are recesses 41. As shown by Figures 4 and 5, this results in that heated air flowing up through the cavity 13 of the outside wall components 10 is not hindered by the ceiling components 40, since it can flow up through the recesses 41. The lateral end surfaces of the ceiling component 40 between the wall components 10 standing on top of one another are closed by sealing panels 42. The ceiling components 40 also consist of two panels which are joined (glued) to one another at a distance by spacer strips.

As Figures 6 and 7 show, measures can also be taken to allow the heated air flowing through the cavity of the outside wall components 10 to flow into the roof components 50 in order to equalize heat losses there, therefore to reduce the K-value in the roof area as well or preferably to lower it to zero. To achieve this, as shown in Figures 6 and 7, in the lower panels 51 of the roof components 50 there are recesses 52 so that the cavity between the panels of the roof components 50 communicates with the cavity 13 between the wall components 10. The cavity between the panels of the roof components 50 is closed in the area of the outer panel 11 of the wall components 10 by a panel 53.

Thus it is ensured that the flow of heat released by the heating means 30 which is located in the area of the sill 20 through the cavities 13 of the outside wall components 10 into the cavity of the roof components 50 is not hindered by the ceiling components 40. In this way it is possible so to speak to isolate the entire outer shell of a building as claimed in the invention such that heat losses through the outside shell of the building formed by the wall components 10, ceiling components 40 and the roof components 50 are prevented.

Figures 8 and 9 show in an oblique view and in a section the execution of two roof components 50 which abut one another in the ridge area (partially shown) in order to illustrate that

the cavities of the roof components 50 there also communicate with one another.

Figures 10 to 13 show schematically one corner of a building as claimed in the invention with outside wall components 10, a ceiling component 40 and a roof component 50. Figures 10 to 13 show that the cavities in the outside wall components 10 can communicate with the cavities in the roof components 50 since there are the corresponding recesses 41 and 52 in the edge area of the ceiling component 40 and roof component 50.

In the embodiment of a sill which is equipped with a heating device 30, shown in Figure 14, and on which the wall components, for example the outside wall components 10 stand upright, the heating means 30 is mounted on a beam 60 which runs lengthwise via retaining bracket 61. The retaining brackets 61 are anchored with their legs in the beam 60.

The beam 60 for its part is supported by a profile strip 62 which has a crosspiece 63 and two legs projecting up from it. The legs 64 via projections 65 (ribs or knobs which run lengthwise) adjoin the lateral surfaces of the beam 60 which runs lengthwise. The profile strip 62 rests on a component which can be placed under it via an insulating layer 60.

The sill indicated in Figure 14 is located under a wall component 10 such that the heating means 30, especially its pipe 32, comes to rest in the cavity 13 between the panels 11 of the wall component 10.

Application examples for an arrangement of this type of sill with a heating means 30 are shown in Figures 15 to 17.

In summary, one embodiment of the invention can be described as follows:

A building consists of wall components 10 and ceiling component 40 made twin-walled as well as roof components 50 likewise made twin-walled. The wall components 10 with their lower

ends rest on sills 20 in which there is a heating means 30. The heating means 30 releases as much heat to the cavity 13 between the plates 11 of the wall components 10 and the ceiling components 40 as well as the roof components 50 that the heat which is lost by heat passage through the outer shell of the building is at least partially, especially entirely, compensated.

As a result, the heat passage through the outside walls and/or the roof components 50 of the building is reduced to zero or nearly so.